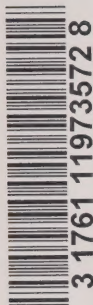


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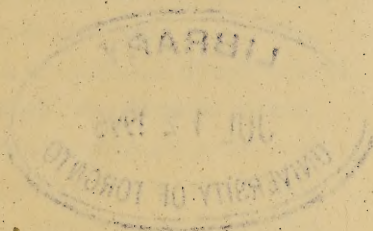


Ministry of Environment and Energy
Waste Reduction Branch



SCRAP TIRE PROJECT

1993 Project Summaries





PIBS 3201E

AXH9280

The Scrap Tire Project

Ontario generates the equivalent of about 10 million scrap passenger tires every year. The Ministry of Environment and Energy, through the Scrap Tire Project, provides incentives to assist in the development of diversion options for tires under the 3Rs: reduce, reuse and recycle. The project is administered by the ministry's Waste Reduction Branch.

Typical scrap tire diversion projects eligible for funding include:

- demonstrations of new products or processes;
- research and development which uses basic or applied research to create new or improve existing materials, devices products or processes;
- purchase of equipment directly related to a definable tire diversion project;

Only projects which are commercially viable or can demonstrate a reasonable commercial application will be funded. Generally, funding for projects is limited to a maximum grant whose upset limit is adjusted annually. For 1993-94, this limit was set at \$250,000 AND is expressed as a percentage of costs to a stated maximum grant. For capital grants, it is also linked to an annual targeted diversion of scrap tires.

To be eligible for funding, recipients must operate in Ontario and process Ontario scrap tires. A wide range of organizations qualify, including; Canadian corporations, Canadian subsidiaries of foreign owned firms, universities and municipalities.

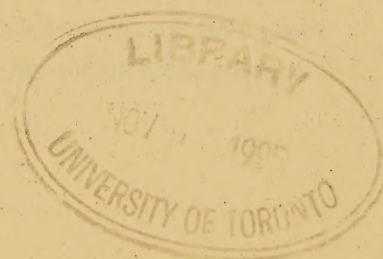
Applications for Scrap Tire Project funding must include detailed technical and financial information. If the proposal is for a large capital project, or entails development of a product, a comprehensive business plan is also necessary. The review of each proposal and subsequent recommendations for funding are based on broad selection criteria including:

- diversion potential
- financial viability
- technical feasibility
- markets for finished products
- experience of the proponent
- sources of waste material

This document lists projects which were in progress, or for which a letter of commitment was signed during 1993. The organization which received the grant is listed along with the project contact person.

For guidelines, application forms or further information, please write or call:

Scrap Tire Project
Waste Reduction Branch
Ministry of Environment and Energy
7th Floor
40 St. Clair Avenue West
Toronto, Ontario M4V 1M2
Telephone: (416) 325-4440
Fax: (416) 325-4437



National Rubber Company Inc.

394 Symington Avenue
Toronto, Ontario
M6N 2W3

Contact: Ted Pattenden, President
(416) 657-1111

The National Rubber Company Inc. was founded in 1926 and is a major manufacturer of rubber products for the automotive and industrial markets in Canada. The company has a long history of using recycled industrial rubber. A grant from the MOEE grant will help the company to establish a major tire grinding facility, to develop new products which incorporate large percentages of tire crumb, and to purchase capital equipment to produce a wide range of recycled rubber products.

The company's research program is already well underway. National is experimenting with new ways to incorporate crumb rubber derived from scrap tires into existing products. They are also developing new product lines that can be made from scrap tire crumb. National's products include wheel chocks, dock bumpers, mud flaps, truck bed liners, load restraints, playground mats and automotive parts.

As part of this project, the company has opened a plant at the Toronto waterfront with the capacity to grind more than 3 million tires per year. The crumb rubber produced by the plant will be used internally by National Rubber. The tire grinding facility will be built in two phases. Equipment for the first phase is currently being installed and will be operational in early 1994. Equipment for the second phase is scheduled for installation in 1995.

Canuck Compounders Inc.

180 Sheldon Drive
Cambridge, Ontario
N1R 6V1

Contact: William Dickson
(519) 621-6521

The MOEE is assisting Canuck Compounders with a program of research and development to formulate, test, and market plastic/rubber compounds for commercial use. Canuck already produces a number of plastic compounds derived from recycled plastics and has developed some plastic/rubber compounds on a small scale. The purpose of this project is to develop plastic/rubber compounds that have a high rubber content but that still meet end user specifications. The project will include physical testing of the compounds and optimization of compound properties in the company's pilot scale injection moulding plant. Canuck will work from existing customer specifications to develop compounds that meet a current market demand.

Recovery Technologies Inc.

5925 Airport Road, Suite 612

Mississauga, Ontario

L4V 1W1

Contact: Gary Mottershead, President

(905) 672-9448

Recovery Technologies Inc. manufactures equipment to produce crumb rubber from scrap tires and operates a full scale tire grinding facility in Ontario. The company specializes in cryogenic grinding equipment, which freezes tires using liquid nitrogen, making the tires very brittle. Recovery Technologies has sold turnkey plants to Italy, Switzerland, and Mexico and expects to sell more plants in the coming year. In April 1993, the company opened a tire crumbing facility in Cambridge, Ontario capable of crumbing more than 1,000,000 tires per year.

The MOEE grant assisted the company with the construction of their Ontario plant and with the development of new tire grinding technology.

Ultraseal Construction Products Ltd.

5309 Maingate Drive

Mississauga, Ontario

L4W 1G6

Contact: Hendrik Van Kooten

(905) 629-2209

Ultraseal produces hot applied rubberized asphalt products, waterproofing membranes and crack and joint sealants. The products contain between 7% and 25% reclaimed rubber crumb.

Two Ultraseal products (a Crack Sealant and a Waterproofing Membrane) are listed in the Ministry of Transportation (MTO) Designated Sources Manual.

The MOEE grant to Ultraseal was used to assist the company with the purchase of capital equipment. To date, Ultraseal has recycled more than 140 tonnes of crumb rubber from Ontario scrap tires.

Harbourfront Corporation

410 Queens Quay West
Toronto, Ontario
M5V 2Z3

Contact: Avon MacFarlane
(416) 973-4179

Ann Tindal Park at Toronto's Harbourfront development suffers from highly concentrated pedestrian traffic. (Approximately 3 million people visit Harbourfront each year.) Damage from heavy traffic requires extensive soil maintenance and turf replacement.

With the assistance of the MOEE, Harbourfront field tested the use of crumb rubber from scrap tires as a soil amendment to improve the drainage and aeration of the grass. This approach has been used to a limited extent, with promising results, in the treatment of similar problems in the goal mouth of soccer fields. This was the first large scale application of the approach in Ontario.

The tests used a mixture of 25% crumb rubber with 75% sand as a sub-base for a newly sodded area. Comparisons were made between the test area and a control area with no crumb rubber. These comparisons showed that:

- The crumb rubber test area was far more capable of sustaining high volumes of pedestrian traffic;
- The crumb rubber test area required more aeration, water, and fertilizer, but that the cost of this extra maintenance was less than the cost of re-sodding a conventional lawn every year.
- Compaction of the lawn in the test area was noticeably less than in the control area.

Harbourfront found that future installations could use up to 50% crumb rubber in the sub-base.

Domal Envirotech Inc.

286 Atwell Drive, Unit 4
Etobicoke, Ontario
M9W 5B2

Contact: Fred Svirklys, President
(416) 698-8213

Domal Envirotech produces compression moulded collars and risers for maintenance hole covers on municipal streets. These products are made with a high percentage of crumb rubber from scrap tires and each collar/riser combination consumes the equivalent of approximately 35 tires.

Maintenance holes are often damaged by freeze/thaw cycles and traffic. The collar/riser combinations were designed as a simple, effective repair for this type of problem. Domal received the 1991 Market Development Award from the Recycling Council of Ontario for its product. In 1992, the Ministry of the Environment and Energy, in cooperation with the Ministry of Transportation and several municipalities in Metropolitan Toronto, funded the evaluation of over field 100 installations of the collar on municipal roads.

Based on the results of those tests, the MOEE provided a second grant to Domal to assist in the establishment a commercial scale production facility for the collars and risers.

Custom Cryogenic

P.O. Box 567

Simcoe, Ontario

N3Y 4N5

Contact: John O'Neill

(519) 426-5544

The company is conducting a pilot study to produce and test two types of rubber/polymer compounds: in one crumb rubber would be compounded with thermoplastic resins, in the other rubber/elastomer mixtures would be tested as inexpensive replacement for high performance elastomers.

Should the research phase be successful, the company proposes to establish a fully integrated scrap tire rubber and plastic reprocessing facility utilizing 2.5 million tires per year.

Test results and a final report for the research phase are expected to be completed by September 30, 1994.

**Summit Diesel Ltd. o/a LOB
Blasting Mats**

P.O. Box 1859

Sturgeon Falls, Ontario

P0H 2G0

Contact: Paul Villgren

(705) 522-8002

The company, located in Sturgeon Falls, currently manufactures blasting mats out of scrap passenger tires only, and is proposing to move into truck tires as an added raw material to improve the mat quality for blasting purposes. MOEE agreed to fund the purchase of new equipment for this new endeavour.

126,000 tires are presently diverted at the facility. With the new equipment purchase the company will be diverting 257,000 tires annually.

**Management Board Secretariat,
Science Centre Composting**

The Green Workplace

Room M2-59, MacDonald Block

900 Bay St.

Toronto, Ontario

M7A 1N3

Contact: David Sparling

(416) 327-2671

Under this proposal, oversized scrap tire crumb has been used as a bulking agent, in an experimental composting project at the Ontario Science Centre. The crumb has been mixed with other compostable matter, food, paper and wood chips, and entered into a specially designed composter. The purpose of the project is to assess the viability of using the crumb, first, as a composting bulking agent, and secondly, in a plant growth medium.

A report will be provided, by MBS, by May 1, 1994 assessing the viability and success of the experiment.

**Thermofriction Waste
Recycling Inc. (TWR)**

85 Passmore Avenue

Agincourt, Ontario

M1S 3B6

Contact: Michael Crupi

(416) 291-3519

TWR is a Canadian owned manufacturer of crumb rubber. The steel component is separated out of the tire crumb during processing by passing through three thermal screw presses. Four types of crumb sizes are produced: 1/4 inch, 8 mesh, 10-20 mesh and 20-30 mesh.

The company sells tire crumb to be used in-tire derived products like rubberized mats, running tracks, truck bumpers, mud flaps, membranes and sealants.

University of Ottawa

Faculty of Engineering

161 Louis Pasteur

Ottawa, Ontario

K1N 6N5

Contact: Dr. Vinod Garga

(613) 564-3432

The University's Civil Engineering Department is testing the geophysical and environmental properties in construction for a retaining wall and fill application for scrap tires. This is a significant test as there is little or minimal preparatory treatment required for the tires and should the tests results be positive, quantities in the tens and hundreds of thousands can be diverted in this type of recycling application.

Test results are anticipated in the final report by January 31, 1995.

**Ministry of Transportation (MTO),
Light Weight Fill**

Transportation Engineering and Standards
Branch

1201 Wilson Avenue

Downsview, Ontario

M3M 1J8

Contact: John Slobodzian,

Environmental Office

(416) 235-3478

MOEE and MTO propose to test shredded tires as a substitute for light weight fill in road construction applications. It is anticipated that one road construction project will be installed in 1994 with concurrent environmental and geophysical monitoring over a period of one to two years.

There is a potential to divert a minimum of 500,000 tires in any one application, however, the legislative requirement for site certificates of approval is the major hinderance in this proposal. Should the project prove to be successful, current MOEE legislation will need to be amended to incorporate this type of recycling.

**Ministry of Transportation,
Retread Project**

Supply and Service Branch
Ontario Government and Fleet Service
Room 135, Central Building
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8
(416) 235-4940

200 retreaded tires have been installed on 40 high-usage fleet vehicles in various ministries (eg. MTO, MOEE, MNR, OMAF) to ascertain their viability for usage in fleet vehicles, potentially supporting retread usage in more OPS fleet vehicles and in future OPS procurement policies. It is anticipated that another 10 vehicles, used by Ministers, Deputy Ministers and Chairs of Ontario Crown Corporations will also be fitted with retreads in a public relations effort.

Not only will this project provide valuable information on passenger tire retreading and assist directly in efforts to educate OPS fleet users, the results of this project will be used as a first step in educating the public and allaying fears that retreaded tires are unsafe. Finding a technology that successfully retreads passenger tires is only a small hurdle in relation to the problem of public perception in this regard.

There are no diversion quantities for this project. The results of this test are expected by August 1994.

**Ministry of Transportation,
Tire Maintenance Kits**

Supply and Service Branch
Ontario Government and Fleet Service
Room 135, Central Building
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8
(416) 235-4940

1000 tire maintenance kits have been purchased for distribution to OPS fleet managers to be used in fleet vehicles, as an information kit to educate the fleet operators in proper tire maintenance, thereby extending the tire life of fleet vehicles. Additionally, if used correctly, they will reduce the number of tires scrapped by fleet managers, thus supporting our reduction targets and saving money on new government tire purchases.

There are no tires diverted in this project. A report on the success of this project is expected March 31, 1994.

Rubber Modified Asphalt Projects

Since 1990, there have been 22 Rubber Modified Asphalt (RMA) projects across the province. These projects have helped municipalities clean up half a million scrap tires, pave 125 kilometres of two-lane road and install 3 composting/recycling asphalt pads.

The results of the first 11 of these projects were evaluated in a report commissioned by the MOEE. The ministry intends to assess the recommendations in the report over the coming weeks and use the results for planning the future direction of the province's RMA program and its scrap tire management strategy.

The following pages are summaries of the RMA projects which have been carried out to date.

**ONTARIO MINISTRY OF ENVIRONMENT AND ENERGY
RUBBER MODIFIED ASPHALT PROJECTS 1990 - 1993**

Proponent	Crumb Rubber Type	Location	Tires Recycled (PTE)
Town of New Liskeard	cryogenic	0.75 km of Highway 65, west link	6,000
Town of Fort Frances	ambient	0.5 km of Colonization Road East 0.15 km of Rover Road 0.1 km of Armit Avenue	10,000
Barrie Township	cryogenic	1 km of South Mazinaw Heights Road	5,500
Maryborough Twp.	combination	2.71 km of Side Road 6	7,250
Town of Pelham	ambient	2.0 km of Rolland Rd. 0.5 km of Tice Rd.	6,250
City of Windsor	cryogenic	1.3 km of Wildwood, Beachdale and Esplanade Streets	11,000
Wellington County	cryogenic	2.1 km of County Road 2 3.6 km of County Road 14	12,000
Northumberland County	cryogenic in wet process**	140 m2 recycling pad 2 km of County Roads 9 and 18	2,613
Town of Kirkland Lake	cryogenic	0.3 km of Main Street (to be completed in 1994)	1,500
City of Port Colborne	cryogenic	90 m2 composting pad	6,308
City of Cambridge	cryogenic	0.5 km of Stanley Street	1,884
Bentinck Township	cryogenic	2.5 km of Township Road	8,200
Regional Municipality of Halton	ambient	2.7 km Britannia Road and 5th Line (Halton Landfill Road)	37,000
Regional Municipality of Haldimand-Norfolk	ambient	1) 12 km Regional Roads 9 and 55	78,000
	cryogenic	2) 12.7 km Regional Roads 9 and 55	60,000
Grow Rich Inc.	cryogenic	1.41 ha2 composting pad	16,000
Grey County	ambient	1) 12.5 km of County Road 12	33,000
	cryogenic (cold in place) recycling	2) 5.1 km of County Road 13	7,000
	combination cryogenic	3) 2.6 km of County Road 13 11.2 km of County Road 4	65,000
Township of Proton	cryogenic	4.6 km of Township Road 22	7,000
Thamesville Highway #2*	ambient	1) 13.5 km of Highway 2	31,100
	ambient recycled	2) 23.8 km of Highway 2	26,500
Highway 400*	cryogenic in wet process**	0.5 km Highway 400, South of Barrie	1,400
County of Lambton	cryogenic (cold in place)	2.5 km of County Road 33	16,000

* Jointly sponsored by the Ontario Ministry of Transportation

** Wet process (crumb rubber blended with asphalt cement)

Grey County - Rubber Modified Asphalt (#1)

Highways Department
County Administration Building
595 - 9th Avenue East
Owen Sound, Ontario
N4K 2W3

Contact: Gary Shaw
(519) 376-7337

In November 1991, the Ministry of Environment and Energy provided funding support to Grey County to pave a 12.5 km portion of County Road #12. The demonstration is located on County Road #12. 1 km was paved in October 1991 and the rest was paved in May 1992. Hot mix technology was used with 2% ambient ground rubber added. A total of 33,000 scrap tires were used.

A course of conventional asphalt with the same thickness, was applied on a section of road adjacent to the rubber modified section for the purposes of comparison.

The project included monitoring of the air emissions from the asphalt plant, as well as long term monitoring of the performance of the road surface.

Grey County - Rubber Modified Asphalt (#2)

Highways Department
County Administration Building
595 - 9th Avenue East
Owen Sound, Ontario
N4K 2W3

Contact: Gary Shaw
(519) 376-7337

In 1992, the Ministry of Environment and Energy funded Grey County to pave 5.1 kilometres on County Road #13 with 2% cryogenically ground rubber added. The project used a technique known as "cold-in-place" recycling, which recycles the asphalt from the previous road surface without transporting it to an asphalt plant. The project used 7,000 scrap tires.

The main objective of this demonstration was to assess the effectiveness of cold-in-place recycling technology for using scrap tire crumb and for improving the performance of the road surface.

The project will continue to be monitored to assess the long term performance of the road.

Grey County Closed Loop Project (#3)

Highways Department
County Administration Building
595 - 9th Avenue East
Owen Sound, Ontario
N4K 3E3

Contact: Gary Shaw
(519) 376-7337

The objective of the Closed Loop Project is to ensure that used tires generated in Grey County are sent to a recycler and that recycled tire rubber markets are supported.

Under the project, the equivalent number of scrap tires brought to recyclers is returned to the County through the purchase and use of value added products containing rubber and rubber modified asphalt (RMA).

The project includes support for an education program, collection depot and vehicle and RMA projects. Local municipalities and tire dealers are joining the program and supplying scrap tires. The project is expected to divert 65,000 tires through RMA with the remainder being recycled for value added products containing rubber (composters, mats, etc.), and engineering uses. The Closed Loop demonstration will operate until at least August 1996.

In 1993, two RMA projects were completed with more planned for 1994. Paving was completed on 2.6 kilometres of County Road 13 using a cold-in-place recycling method with 2% rubber crumb added (both cryogenic and ambient ground). The County also paved 11.2 kilometres of County Road 4 using hot mix technology with 2% cryogenically ground rubber added.

MTO Highway 400 (Asphalt Rubber)

Ministry of Transportation
Engineering Materials Office
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

Contact: Kai Tam, P.Eng.
(416) 235-3715

In 1990, MTO paved 0.5 km of Highway 400, south of Barrie, with "wet process" HL1 containing 80 mesh ambient crumb in the asphalt cement. 1,400 scrap tires were used. Monitoring will continue to determine the long term performance of the pavement.

**MTO/MOE (Thamesville) -
Rubber Modified Asphalt**

Ministry of Transportation
Engineering Materials Office
1201 Wilson Avenue
Downsview, Ontario
M3M 1J8

Contact: Kai Tam, P.Eng.
(416) 235-3715

The Ministry of the Environment and Energy (MOEE) began a joint rubber modified asphalt project with the Ministry of Transportation in 1990. The project was carried out on Highway #2, just east of Thamesville and proceeded in two phases. In Phase 1, completed in 1990, both conventional and rubber modified asphalt were laid along a 12 kilometre stretch of road. In 1991, sections of both the conventional and the rubber modified asphalt were successfully recycled. In addition, an additional section of road was paved with rubberized asphalt, using a new mix design.

Both Phase I and II used hot mix technology with 2% rubber added. 31,100 scrap tires were used in the first Phase and 26,500 tires in Phase II. All of the pavement sections are being monitored to determine the long term performance of each mix.

As well, comprehensive air emission test were carried out on the asphalt plant in 1990 and 1991 during the construction of each project.

**The Regional Municipality of
Haldimand-Norfolk - Rubber
Modified Asphalt (#1)**

Regional Administration Building
70 Town Centre Drive
Townsend, Ontario
N0A 1S0

Contact: Nils Lambert
(519) 587-4911

In 1990, the MOEE sponsored a 12 km trial of rubber modified asphalt with Haldimand-Norfolk Region. Both conventional and rubber modified asphalt were laid on sections of Regional Roads 55 and 9, using hot mix technology. The project used the unburned tires remaining from the Hagersville fire as part of the crumb rubber supply contract. The project used 78,000 scrap tires.

In addition to allowing for direct comparisons between conventional and rubber modified asphalt, the project included an extensive air monitoring program.

The project is being monitored over the next several years to determine the long term performance of the rubber modified asphalt.

**The Regional Municipality of
Haldimand-Norfolk - Rubber
Modified Asphalt (#2)**

Regional Administration Building
70 Town Centre Drive
Townsend, Ontario
N0A 1S0

*Contact: Nils Lambert
(519) 587-4911*

In 1992, the Ministry of Environment and Energy provided funding support to Haldimand-Norfolk Region for a 12.7 km, 2-lane trial of rubber modified asphalt using hot mix technology. The demonstration was located on three test sections of Regional Roads 55 and 9 and was the first rubber modified asphalt project to use an Ontario cryogenically produced crumb rubber in hot mix. 60,000 scrap tires were used.

The project has allowed for direct comparisons in performance and air emissions between ambient and cryogenic rubber modified asphalt. Project monitoring will continue over the next several years to determine the long term performance of the roads.

**Proton Township (Grey County) -
Rubber Modified Asphalt**

R.R. #1
Dunalk, Ontario
N0C 1B0

*Contact: Helgi Scott, Clerk
(519) 923-2110*

In conjunction with a rubber modified asphalt project in Grey County, the Ministry of Environment and Energy provided support in 1992, to Proton Township to pave 4 kilometres of road. The demonstration is located on Township Road #22. Hot mix technology was used with 1.5% ambient crumb rubber added. A total of 7,000 scrap tires were used.

The project provided information on the performance of rubber modified asphalt on lower volume sideroads. Monitoring will continue over the next several years to determine the long term performance of the rubber modified asphalt.

The Regional Municipality of Halton - Rubber Modified Asphalt

Public Works Department

1151 Bronte Road

Oakville, Ontario

L6J 6E1

*Contact: Cliff Chan, Landfill Engineer
(905) 825-6021*

In September 1992, the Ministry of Environment and Energy sponsored a rubber modified asphalt demonstration with the Region of Halton to pave a container storage pad and 2.7 kilometres of 2-lane access road at the Region's new landfill site. The objective of the project was to evaluate the fatigue strength of rubber modified asphalt under heavy-load vehicle traffic situations.

Hot mix technology was used with 2% and 3% ambient ground rubber. The project consumed 37,000 scrap tires. The project will be monitored over the next several years to assess the long term performance of the rubber modified asphalt.

In addition to RMA, Halton received approval to apply 4-6 inch tire shred on an unpaved road at the Halton Region Landfill site for stabilization purposes and wear reduction to the compactor. The project used 37,000 tires.

Grow-Rich Inc. - Rubber Modified Asphalt

8923 Chippawa Road

Niagara Falls, Ontario

L2E 6S5

*Contact: Ed Ciepiela, Marketing Manager
(905) 357-6421*

In 1992, the Ministry of Environment and Energy provided a grant to Grow-Rich to pave 2.1 hectares of a composting pad. The demonstration is located at Grow-Rich's Niagara Falls composting facility. Hot mix technology was used with 3% cryogenically ground rubber added. A total of 16,000 scrap tires were used.

The demonstration included experimentation with the quality of rubber granules in the mix, evaluation of the liquid run-off from rubberized asphalt paved surfaces and examination of the effects on the surface from heavy equipment with frequent turning movements.

As well, air monitoring was carried out on the asphalt plant during construction of the project. The rubber modified surface will be monitored over the next several years to assess its long term performance. 16,000 scrap tires were used.

**Lambton County -
Rubber Modified Asphalt**

Public Works Department
Box 3000
Wyoming, Ontario
N0N 1T0

*Contact: J.D. French, Director
(519) 845-0801*

In 1992, the Ministry of Environment and Energy provided funding support to Lambton County to complete the first "cold-in-place" recycling project in North America using cryogenic crumb.

The County paved 2.5 kilometres of 2 lane County Road #33 using cold-in-place technology with 2% rubber added. A total of 16,000 scrap tires were used.

The project will be monitored to determine the extent to which the process may reduce or prevent reflective cracking in asphalt pavements and to assess the effectiveness of the cold-in-place recycling process as an end use for crumb rubber.

**Town of New Liskeard -
Rubber Modified Asphalt**

P.O. Box 730 Whitewood Ave.
New Liskeard, Ontario
P0J 1P0

*Contact: Dan Harvey
(705) 647-4442*

In 1993, MOEE funded the Town of New Liskeard to pave 0.75 kilometres of Highway 65 (westerly link). The project used cryogenically ground rubber, No. 4 mesh size. This northern Ontario project paved 2 lanes of Highway #65 and used the equivalent of 6,000 passenger tires.

**Town of Fort Frances -
Rubber Modified Asphalt**

320 Portage Avenue
Fort Frances, Ontario
P9A 3M5

*Contact: Bruce Spottiswood
(807) 274-5323*

In 1993, MOEE funded the Town of Fort Frances to pave: 458 metres of Colonization Road East; 250 metres of River Road; and 100 metres of Armit Avenue. The project used 3% ambient ground crumb rubber. This northern Ontario project used the equivalent of 10,000 passenger tires. The project helped the town clean up a tire stockpile at the local landfill site.

**Barrie Township -
Rubber Modified Asphalt**

Box 250
Cloyne, Ontario
K0H 1K0

*Contact: Charles Snider
(613) 336-9840*

In 1993, the MOEE funded Barrie Township to pave 1 kilometre of South Mazinaw Heights Road. The project used 2% cryogenically ground crumb rubber, between 20 and 30 mesh size. The project used the equivalent of 5,500 passenger tires.

**Maryborough Township -
Rubber Modified Asphalt**

1 Hilwood Drive
P.O. Box 39
Moorefield, Ontario
N0G 2K0

*Contact: Sandy Vallance
(519) 638-3044*

In 1993, the MOEE funded Maryborough Township to pave 2.71 kilometres of Sideroad 6. The project used 1.5% of No. 10 crumb rubber (cryogenic and ambient). The project used the equivalent of 7,250 passenger tires.

**Town of Pelham -
Rubber Modified Asphalt**

Department of Operations
P.O. Box 400
Pelham Municipal Building
20 Pelham Town Square
Fonthill, Ontario
L0S 1E0

*Contact: Mark Page
(905) 892-2607*

In 1993, MOEE funded the Town of Pelham to pave 2.5 kilometres of town road (2 km of Rolland Road and 0.5 km of Tice Road). The project used 2% ambient ground crumb rubber. The project used the equivalent of 6,250 passenger tires.

**City of Windsor -
Rubber Modified Asphalt**

Room 302, City Hall
P.O. Box 1607
Windsor, Ontario
N9A 6S1

*Contact: Cliff Woolcock
(519) 255-6326*

In 1993, MOEE funded the City of Windsor to pave 1.3 kilometres of Wildwood Street, Beachdale Street and Esplanade Street. The project used 2% ambient ground rubber No. 10 mesh size. The project used the equivalent of 11,000 passenger tires.

**Wellington County -
Rubber Modified Asphalt**

Administration Centre
74 Woolwich Street
Guelph, Ontario
N1H 3T9

*Contact: Gordon Ough
(519) 837-2601*

In 1993, MOEE funded the County of Wellington to pave a 2.1 kilometre section of County Road 2 and a 3.6 kilometre section of County Road 14. The project used cryogenic ground rubber, No. 10 mesh size. The project used the equivalent of 12,000 passenger tires.

**Northumberland County -
Rubber Modified Asphalt**

Public Works Department
860 William Street
Cobourg, Ontario
K9A 3A9

Contact: Pamela Russell
(905) 372-3329

In 1993, MOEE funded the County of Northumberland to pave 2 kilometres of County Roads 9 and 18 and an asphalt pad at the recycling facility. This was the Ministry's first demonstration of the "wet process" in which crumb rubber is blended and dissolved into liquid asphalt cement. Bitumar's EcoflexTM asphalt rubber binder was used. Ecoflex contains about 10% cryogenic rubber crumb (minus 4 sieve size) dissolved into 90% asphalt cement. This project used the equivalent of 2,613 passenger tires. The "wet process" uses a lower ration of rubber than the dry process.

**Town of Kirkland Lake -
Rubber Modified Asphalt**

1 Dunfield Road
Postal Bag 1757
Kirkland Lake, Ontario
P2N 3P4

Contact: Morley Bowes
(705) 567-9361

In 1993, MOEE funded the Town of Kirkland Lake to pave 300 metres of Main Street. Due to poor weather conditions, actual paving will take place in spring 1994. This northern Ontario project will use 2% cryogenically ground rubber, No. 10 mesh size. The project will use the equivalent of 1,500 passenger tires.

**City of Port Colborne -
Rubber Modified Asphalt**

239 King Street
Port Colborne, Ontario
L3K 4G8

Contact: Hal Woodgate
(905) 835-2900

In 1993, MOEE funded the City of Port Colborne to pave a 90 metre x 90 metre asphalt composting pad at the Elm Street Landfill site. The project used 2% cryogenically ground rubber, No. 4 mesh size. The project used the equivalent of 6,308 passenger tires.

**City of Cambridge -
Rubber Modified Asphalt**

P.O. Box 669
Cambridge, Ontario
N1R 5W8

Contact: David Sanderson
(519) 623-1340

In 1993, MOEE funded the City of Cambridge to pave 500 metres of Stanley Street. A base layer was put down in fall 1993 with the surface course planned for spring 1994. The project used 2% cryogenically ground rubber. The project used the equivalent of 1,884 passenger tires.

**Bentinck Township -
Rubber Modified Asphalt**

R. R. #1

Elmwood, Ontario

N0G 1S0

Contact: Delton Becker

(519) 364-1909

In 1993, MOEE funded Bentinck Township to pave 3.5 kilometres of Township Road (between concession No. 3 and 4 and part of 5). The project used 2% cryogenically ground rubber. The project used the equivalent of 8,200 passenger tires.